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THE ROLE OF SCIENCE AND TECHNOLOGY IN THE CONTEXT OF INTERNATIONAL SECURITY, DISARMAMENT AND OTHER RELATED FIELDS

The role of science and technology in the context of the implementation of disarmament agreements

Working paper submitted by Portugal on behalf of the European Community and its member States

INTRODUCTION

1. An analysis of the role of science and technology in the context of international security including disarmament is a rather comprehensive and complex task: not only is the great variety of science and technology to be included, but also the entire spectrum of security issues, covering political, military and economic security as well as environmental security. Working papers as presented to the United Nations Disarmament Commission in 1991 cover already some but by far not yet all of the issues involved. The European Community (EC) and its member States submitted a working paper containing a list of examples and suggestions for applications of disarmament-related science and technology (A/CN.10/155). This list, we believe, continues to serve as useful background information for further discussion. However, not all of the working papers presented in 1991 have been discussed in sufficient detail, and it is foreseeable that the Disarmament Commission will not have enough time to cover the ground completely. Thus, we are convinced that the only way to achieve concrete results is to select and to concentrate on a limited number of issues.

2. Any selection process is disputable; however, the mandate of the Disarmament Commission as described in the 1978 Final Document of the Tenth

Special Session of the General Assembly, the first special session devoted to disarmament, 1/ is given as "to consider and make recommendations on various problems in the field of disarmament". In line with that mandate, the Disarmament Commission should focus its attention on the role of science and technology in the context of disarmament.

3. Following the end of East-West confrontation, a great number of unilateral, bilateral or multilateral steps in the field of disarmament are under consideration, are being negotiated or are already in the process of implementation, not only between former East-West opponents but also in other regions of the world or in the global context. Disarmament is not, however, only a consequence of changes in the international political environment but also contributes to strengthening positive and cooperative tendencies in international politics.

4. Under these political circumstances, science and technology in the context of disarmament has received a clear mission: to encourage and to facilitate the implementation of disarmament measures resulting from unilateral decisions or bilateral or multilateral agreements.

5. We therefore propose that the Disarmament Commission concentrate on the role of science and technology in the context of the implementation of disarmament agreements. The aim of these endeavours should be to explore possible areas for cooperation and fields of activities for the United Nations. We hope for a concrete outcome which can be forwarded to the General Assembly at its forty-eighth session.

IMPLEMENTATION OF DISARMAMENT AGREEMENTS

6. The implementation of disarmament agreements can comprise the following areas in which science and technology could play a major role:

- Destruction or disabling of surplus military material;
- Conversion of surplus military material for civilian use;
- Destruction of certain military production facilities;
- Transformation of certain military production facilities from military production into the production of civilian goods;
- Verification.

SCIENCE AND TECHNOLOGY FOR DISARMAMENT

Destruction/disablement

7. Technologies for destruction or disabling of surplus military material should meet three requirements:

- The military material should be destroyed or disabled in such a way which would not allow it to be used in contravention of disarmament decisions and agreements;

- The destruction/disablement process should not have harmful effects on the natural environment;

- The destruction/disablement process needs to be carried out in the most economic manner possible and could include the option of recycling material for civilian purposes.

8. The technologies which would satisfy the requirements above might be available in many countries for the mechanical destruction of conventional military equipment such as armoured personnel carriers, tanks or artillery. Destruction, however, becomes more difficult whenever toxic, large quantities of high explosives or otherwise dangerous substances are involved.

9. The destruction of weapons of mass destruction such as nuclear warheads or chemical weapons or the destruction of weapons systems containing nuclear reactors requires specific knowledge and scientific and technological capabilities available only to very few countries. As the destruction of these weapons is of particular concern to the international community, in terms of its timeliness and its ecologically responsible implementation, the availability of adequate technologies to the country concerned is of particular international interest. In this respect, the technical experience acquired by the United Nations Special Commission established under Security Council resolution 687 (1991) could be useful to the international community in the implementation and verification of disarmament agreements.

Examples of international cooperation

10. Large quantities of nuclear weapons are to be destroyed in the Commonwealth of Independent States (CIS) as a result of the implementation of bilateral agreements between the United States of America and the former Soviet Union and unilateral declarations (by Presidents Bush, Gorbachev, Yeltsin) aimed at sweeping reductions of strategic arsenals and at the elimination of all land-based tactical nuclear weapons. The destruction of these weapons poses technical and logistic problems in the areas of transportation, storage and safety. Also, the conversion of weapon-grade nuclear material for civil purposes with a view to preventing its proliferation is another area of concern. In both instances international assistance and an exchange of scientific and technical know-how is called for.

11. Following the bilateral agreement between the United States of America and the former Soviet Union, and as part of the obligations under the future Chemical Weapons Convention, the timely destruction of chemical weapons requires international cooperation. Several countries have already offered technical assistance to the Russian Federation for the destruction of former Soviet chemical weapons.

The conversion of surplus military material

12. Conversion of surplus military material refers to a change in the use, from a military use to a civil one. While a number of experiments, proposals and actions are already known, the traditional image of beating swords into ploughshares does not take into account all the difficulties involved. Conversion must be:

- technologically feasible,
- justified by civil demand,
- cost-effective in terms of the conversion itself as well as in regard to the performance of the converted military material in the civil sector.

With a view to the last requirement, considerable research is still necessary. The large amount of military material to be disposed of within the coming years demands that economical methods should be accessible to all countries concerned as soon as possible.

The destruction and transformation of selected military production facilities

13. The destruction of selected military production facilities as the result of a disarmament agreement should only be an ultima ratio. Some market economies already have practical experience in conversion of military to civil industry as a result of a change in demand. The situation differs when the defence industry to be transformed is of great economic importance or enjoys particular privileges in the country concerned. In these cases, the transformation of selected military production facilities raises social, economic and technological problems which by their nature are outside the scope of the Disarmament Commission.

14. The research and production of military armaments tend to involve a large proportion of advanced technologies and production techniques as well as highly qualified scientists. The availability of those scientists in the civilian market as a result of transformation could have beneficial effects for the civil economy in the particular country. However, unemployed, highly specialized scientists for the production of weapons of mass destruction might be lured by well-paid jobs in other countries with ambitions in the development of their own weaponry. Thus, worldwide efforts to limit the proliferation of these weapons would be hampered. For this reason, the Russian Federation, supported by the European Community, the United States and

Japan undertook to establish an International Science and Technology Centre near Moscow which shall give former Soviet weapon scientists and engineers incentives to redirect their expertise to non-military endeavours and thus contribute to minimizing proliferation of weapons of mass destruction as well as of missile delivery systems and other advanced military technologies; it shall also directly contribute through appropriate science and technology projects to the reduction and elimination of weapons of mass destruction. This initiative is a good example for international cooperation in the context of the implementation of disarmament decision and agreements.

The verification of disarmament agreements

15. Effective verification of compliance is the most important contribution to building confidence. Considerable work has been done on the issue of verification of disarmament agreements, within and outside the United Nations. Among them, the Disarmament Commission agreed on 16 principles of verification (adopted by the General Assembly in its resolution 43/81 B of 7 December 1981) and more recently, a comprehensive study on the role of the United Nations in the field of verification was completed. Thus, the purpose and value of verification need not be repeated in detail.

16. Parties to disarmament agreements should receive assurances that obligations will be fulfilled completely. In order to create equal verification opportunities, one possible solution is to agree upon the lowest level of verification technology available to all parties. However, there is no doubt that improved verification methods can increase detection of non-compliance and thus aid confidence-building.

17. Verification methods differ according to the purpose and scope of the disarmament agreement and the area of application. National technical means and cooperative measures complement each other. To ensure adequate and effective verification, States must have access to and be in a position to afford the necessary means of verification. As many States do not have the funds and expertise to perform the full range of possible verification tasks, cooperation is necessary not only to ensure equal opportunities for participation in verification but also for technical reasons.

18. International cooperation on the development and improvement of verification technology will have to deal with a number of basic problems:

- Technical difficulties to evaluate and analyse large amounts of information collected through modern information and communication instruments;

- The need for political targets and orientation data in order to focus research and development more effectively;

- The reluctance of political decision-makers to establish political targets without knowing what will be technically feasible. International cooperation should therefore try to identify possibilities for solving these problems.

INTERNATIONAL COOPERATION IN DISARMAMENT-RELATED SCIENCE AND TECHNOLOGY

19. Disarmament agreements need to be implemented fully. Technical problems to be solved vary widely. Technologies required range from low-technology destruction techniques, such as those for destroying tanks, and the high-technology destruction or transformation of nuclear warheads and chemical weapons to the high-technology verification activities associated with the establishment of data banks.

20. Possible bilateral, regional and global security benefits to be gained from disarmament agreements depend to some extent on the availability of science and technology. Security benefits could apply both to parties to an agreement and neighbouring States. Thus, the implementation of no disarmament agreement should be hampered because of the lack of the required technology. It is in this context that the Twelve consider international cooperation in disarmament-related science and technology to be indispensable.

21. With respect to increasing risks of proliferation of high technology with military applications and at the same time to legitimate interest of the international community in the transfer of high technology for civil purposes, it is our wish that discussion and cooperation continues along the lines set out in paragraph 16 of the report of last year's Working Group IV. 2/ We hope that the debate will continue following the request of the General Assembly to the Conference on Disarmament made in its resolution 46/36 L of 9 December 1991, paragraph 13, to address the problems related to the transfer of high technology with military applications and to weapons of mass destruction and elaboration of practical means to increase openness and the transparency in this field.

22. Responsibility for cooperation in disarmament-related science and technology lies with sovereign States. Cooperation could comprise acquisition, exchange, sharing, participation in and transfer of science and technology. All these activities are already part of normal international economic and military relations. Numerous examples for such cooperation exist. However, we believe that in view of the overall importance of disarmament-related technologies, additional efforts should be undertaken by the international community in order to make these technologies accessible to all interested States.

23. In this context, the European Community and its member States propose the following potential areas for discussion so as to assist in developing recommendations to be made by the Disarmament Commission to the General Assembly at its forty-eighth session:

(a) The reporting to the United Nations of applied disarmament-related technologies by parties to existing disarmament agreements in order to prepare an inventory accessible to all States;

(b) The inclusion in the above-mentioned reports of the modalities for a possible transfer of applied disarmament-related technologies;

(c) The need to offer to all interested States useful points of contact to assist in the familiarization with applied disarmament-related technologies;

(d) The value of organizing international conferences, seminars and other meetings of a scientific and technological character with the aim of identifying and analysing specific aspects of disarmament-related technologies;

(e) The encouragement of joint preparation and implementation of disarmament-related technology programmes.

Notes

1/ General Assembly resolution S-10/2, para. 118 (a).

2/ A/CN.10/1991/CRP.6.